D2.1
Co-creation workshop Report 1

Revision v0.3

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Abstract

This is the report describing the result of the activities organised since January 2023 to define the Challenges of the NGI SARGASSO Open Calls #1 and #2.

Keywords

Open calls, challenges, knowledge areas, NGI

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V0.2	29-01-24	Review and comments	Sara Abu
V0.3	01-02-24	Final Version	Vandermersch-Desmartin, Detsis

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Nature of the deliverable		R
Dissemination level		
PU	Public, fully open. e.g., website	✔
CL	Classified information as referred to in Commission Decision 2001/844/EC	
CO	Confidential to NGI Sargasso project and Commission Services	

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Table of contents

This project has received funding from the European Union's Horizon Europe Research and Innovation program under Grant Agreement No. 101092887

List of figures

List of tables

Acronyms

NGI	Next Generation Internet
EC	European Commission
USA/US	United States of America
CA	Canada
DLT	Distributed Ledger Technology
NGO	Non-Governmental Organization
SME	Small and Medium-Sized Enterprise
EU	European Union

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Executive summary

This document presents a comprehensive overview of NGI SARGASSO's year-one community consultation. The analysis followed a multi-level stakeholder approach, involving notably experts from various domains such as trust and data sovereignty on the Internet; trustworthy open search and discovery; Internet Architecture or DLT Technologies.

This provided the information basis for identifying the specific research challenges to be addressed in the open calls.

The different means to gather input from the New Generation Internet Experts are the following:

- Survey to the broad public: Sent via different communication channels, opened to anybody. Primary channel of dissemination was the NGI community.
- Interviews with NGI experts
- Government consultation: Series of meetings have been organised with representatives of the Canadian Government
- Workshops: The Evaluators of the first Call have been invited for a feedback workshop to analyse the results of the Call and the answer to the Challenges defined.

In total, 10 challenges have been identified for each Call.

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Introduction

The NGI SARGASSO Programme represents a pivotal initiative under the European Union's Horizon Europe Research and Innovation Programme, aiming to properly forward the realms of digital innovation and technological advancement. It is evident that the determination of the Challenges of the NGI SARGASSO Open Calls is a key part of the project.

The Challenges of the Open Call 1 and 2 where decided by the NGI SARGASSO consortium, with input from several initiatives managed by the ESF, discussions with the Project Officers of the project and consortium partners knowledge and experience. One of the objective was to have a good diversity of actors, from various sectors of society: academia, government, industry and societal partners, and from different geographies.

Shared expertise and experience from those actors lead to the identification of joint challenges.

Survey

Introduction

The first initiative was to create a survey that would help to understand the global situation and identify the most important issues NGI is facing, as well as collecting input from the broad public, without focusing on a specific population.

The survey, crafted by ESF in collaboration with AUSTRALO, was designed to be straightforward and easy to answer, ensuring that it could be completed in just 5-10 minutes. Launched in early 2023, it was extensively promoted through NGI SARGASSO's social media channels, particularly on LinkedIn and Twitter. These platforms were utilized to regularly post about the survey, leveraging trending hashtags relevant to the field of next-generation technologies. Additionally, the survey was also featured on the project's official website, providing another avenue for participation. The survey period concluded in April 2023.

The survey's questions can be seen on Annex 1.

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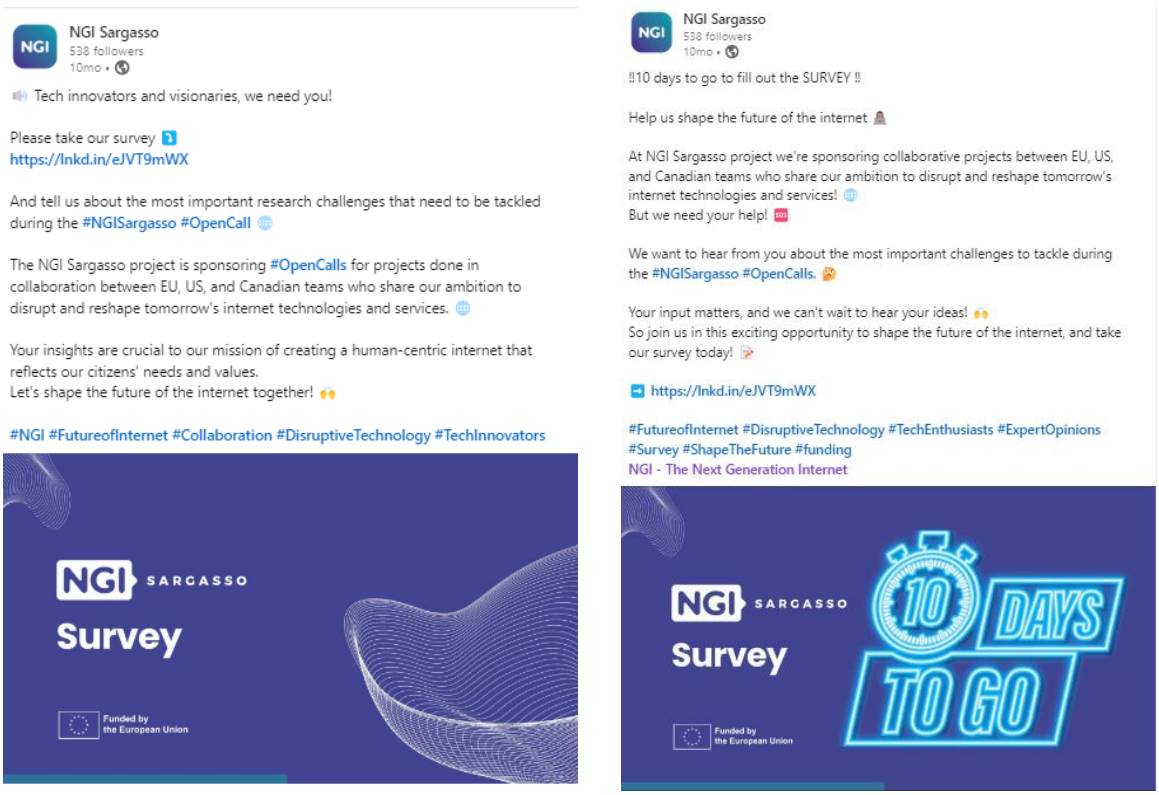

FIGURE 1. PROMOTION OF THE SURVEY ON SOCIAL MEDIA

Participants

A total of 58 people answered the survey. Half of them had previous experience with NGI initiatives. The following tables and figures describe their profile.

Employment Status	Count
Employed in IT related industry	8
Researcher in an academic institution	16
Non-Profit employee	9
Researcher in an academic institution; Non-Profit employee	1
Researcher in a non-academic institution	6
Researcher in an academic institution; Governmental/Public/Agency employee	3
Researcher in a non-academic institution; Employed in IT related industry	2

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Employed in IT related industry; Self-employed / Consultant	2
Researcher in a non-academic institution; Self-employed / Consultant	3
Governmental/Public/Agency employee; Other	1
Researcher in an academic institution; Self-employed / Consultant	1
Employed in IT related industry; Governmental/Public/Agency employee	1
Self-employed / Consultant	2
Employed in IT related industry; Non-Profit employee	1
Researcher in an academic institution; Researcher in a non-academic institution	2

TABLE 2. EMPLOYMENT STATUS OF THE SURVEY'S PARTICIPANTS

Personal interests	Count
AI	38
IoT	34
Cybersecurity	25
Cloud/Edgecomputing	23
Privacy and Trust technologies	23
Web3.0	21
5G/6G	20
BigData	19
Blockchain/Distributed Ledger Technologies	19
Digital Commons	12
E-ID	11
Augmented/eXtended/VirtualReality	10
Metaverse/FutureMedia	9
Quantum Computing	9

TABLE 2. PERSONAL INTEREST OF THE SURVEY'S PARTICIPANTS

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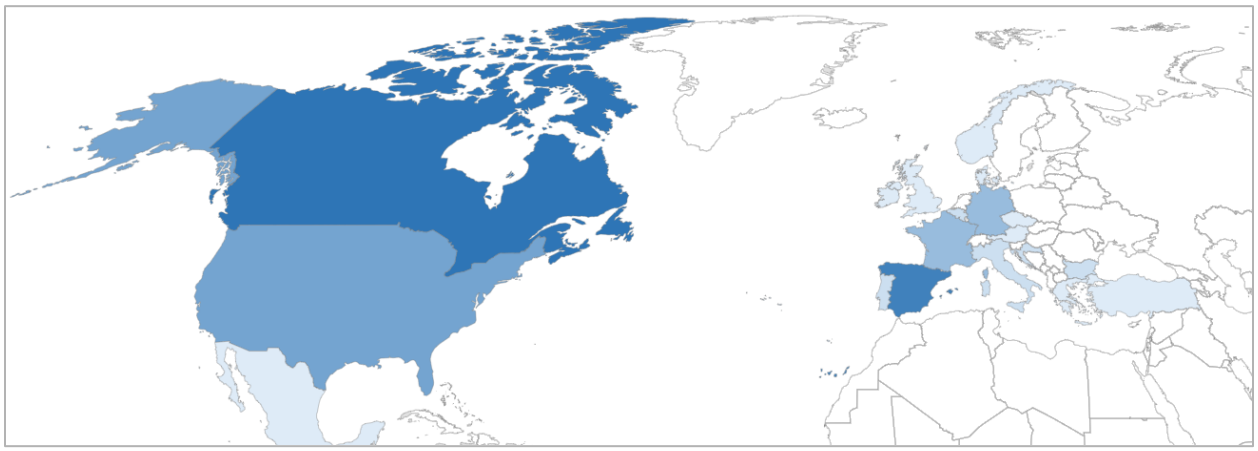

FIGURE 2. COUNTRY OF EMPLOYMENT OF THE SURVEY'S PARTICIPANTS

Analysis of the results

Short Term

The participants were asked what are the most important issues for the development and evolution of the human-centric internet in the immediate future (1-3 years). They could choose from the following list and select up to 3 items:

- Internet Architecture renovation
- Interoperability
- Inclusion
- Openness
- Data Protection
- Data Sovereignty
- Privacy
- Resilience
- Security
- Sustainability
- Transparency
- Trust

As a result, the most important issues in the immediate future were, in the point of view of our participants, Security, Interoperability, Privacy and Trust. All the results can be seen on the table below.

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Issue	Short Term	Long Term	Diff
Security	22	18	-4
Interoperability	19	12	-7
Privacy	16	13	-3
Trust	15	15	0
Openness	13	10	-3
Inclusion	12	9	-3
Data Sovereignty	11	6	-5
Transparency	10	10	0
Data Protection	9	9	0
Sustainability	7	20	13
Internet Architecture renovation	6	15	9
Resilience	4	9	5
Other	3	1	-2

TABLE 3. SURVEY'S ANSWER: MOST IMPORTANT ISSUES IN THE SHORT TERM

Long Term

The participants were then asked what are the most important issues for the development and evolution of the human-centric internet in the LONG-TERM future (5+ years).). They could choose from the same list as the short term question.

As a result, the most important issues in the long term were, in the point of view of our participants, Sustainability, security, Trust and the Internet Architecture renovation.

Issue	Short Term	Long Term	Diff
Sustainability	7	20	13
Security	22	18	-4
Trust	15	15	0
Internet Architecture renovation	6	15	9
Privacy	16	13	-3
Interoperability	19	12	-7
Openness	13	10	-3
Transparency	10	10	0
Inclusion	12	9	-3
Data Protection	9	9	0
Resilience	4	9	5
Data Sovereignty	11	6	-5
Other	3	1	-2

TABLE 4. SURVEY'S ANSWER: MOST IMPORTANT ISSUES IN THE LONG TERM

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The biggest issue foreseen

The last question of the Survey was an open question, asking the participants to indicate which will be their highest priority of funding in the next few years. The exact answers can be found on Annex 2. Following a deeper analysis, the worlds below are the ones who came back the most in the answers:

FIGURE 3. HIGHEST PRIORITY OF FUNDING IN THE NEXT FEW YEARS FROM THE SURVEY'S PARTICIPANTS

They were finally asked if their answer would be different in case they had to take into account the development efforts from the other side of the Atlantic (US or Canada if they were based in Europe, or Europe if they were based in the US or Canada). The vast majority of the participants confirmed that their answer would have remained the same.

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Interviews

Always with the objective to determine the main Next Generation Internet focus areas and technological priorities, and to take different perspectives and geographical specificities into account, we conducted expert interviews in the targeted geographies of the project: Europe and America. The experts were selected for their involvement in the NGI world and their experience in the domain. The questionnaire was sent before the interview and can be seen on Annex 3.

Six interviews were conducted in total, between April and May 2023. The experts name, affiliation and contact details can be seen on the table below.

Name	Institution	Focus Areas	Country	Email
Federico Alvarez	Universidad Politécnica de Madrid	Telecomm Engineering, Multimedia	Spain	federico.alvarez@upm.es
Glenn Ricart	US Ignite	Tech Development	US	glenn.ricart@us-ignite.org
Marleen Stikker and Max Kortlander	WAAG Futurelab for technology and society	Technological and Social Design Skills, Social Innovation.	The Netherlands	Stikker@waag.org mat@waag.org
Jigyasa Sharma	US Ignite	Technology Policy	US	jigyasa.sharma@us-ignite.org
Zuzanna Warso	Open Future Foundation	Digital Infrastructures	The Netherlands	zuzanna@openfuture.eu

TABLE 5. NAME, AFFILIATION AND EXPERTISE OF PEOPLE INTERVIEWED.

We first asked them what did they see as the main challenges for the Next Generation Internet, from their perspective and experience.

The discussions were fruitful and several challenges were identified by the experts. The following list outlines the most discussed.

- AI and Society: How does it affect people and the way they use internet. Generative AI is making the big break, and misinformation is going to be an issue. Precaution and risk

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mitigation is absolutely needed. The generative Ai issue is now pressing and probably will have a lot of interest from both areas to tackle together.

- Coupling of services/Cooperation: How to incorporate the new technological developments, including on governance side
- Digital Public Spaces: As a counterpart of the private platforms
- Digital Identities and Sovereignty: Raise awareness on the matter
- Education of general public on internet services: The public and policy makers need to be educated on Several issues: Data protection, privacy and others.
- Environmental Impact of infrastructures and operations.
- Inclusive Community Engagement / Digital Equity
- Integration of data spaces: Access to the distributed internet and access to data. Affordability of the Internet.
- Operating systems for the cloud: Need of simple cloud operating systems, to avoid the chaotic way that things are being done nowadays.
- Legislation development and coordination: Advertising and target advertising is a big problem. Companies do change course with legislation (GDPR for example). However, the legislation creation is done in a chaotic way. There is a lack of coordination between US and EU. There is no collaborative response to the fears of the citizens. Most problems are dealt in the framework of consumer right/law. However, free market model is the applicable framework which gets no protections. Only focus on consumer legislation.
- Privacy and Democratic values: Mitigate the data surveillance/spying from companies. People's privacy is harmed by the recent evolutions of the internet. Democratic values are constantly being eroded by the surveillance capitalism economic model currently in effect. Sovereignty and autonomy as deep principles of democracy are in danger. Democratic interoperability is needed rather than only technical operability

Short Term Challenges

We then asked them to prioritise the challenges that they would advise to fund in the immediate future (next 1-3 years)

- Policy: The collaboration-cooperation on the Policy Side. The experts put the emphasis on the need to understand the landscape; the dynamics, who are the counterparties in both continents. Teams are working on the same issues but they do not know who is doing the same on the other side of the Atlantic.
- Alternative Digital Spaces: Convince people that they should use alternatives to the commercial providers. Lack of visibility and dearth of alternatives.
- Decentralisation and social structures : Decentralization of social media and understanding what that means for moderation. Activate civic society, journalists, media that needs to be become part of the social structures. Investment in civic tech across Europe is needed.

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- Data sharing and data governance: How to classify them
- Education: Education of public decision makers about limitations of current technology (down to the local level). Industry is directly involved in decision making. What about the risks and limitations? Fight Misinformation
- Solve the techno/legal framework for internet services across the Atlantic : What kind of new services from high-speed networks, interconnections (underwater high speed connection), the challenges of data services and cloud systems across the Atlantic, (regulation on both sides). Safety, security and education are global issues
- Surveillance Advertising: Mitigate the data surveillance/spying from companies. People's privacy is harmed by the recent evolutions of the internet

Long Term Challenges

The experts were also asked to identify long term challenges:

- Energy Consumption/ Internet Sustainability: Reduce the level of resources needed, the footprint of the New Technologies. Maintenance, repair and sustainability are part of a real long term challenge.
- Global connectivity: Access to internet at any time, everywhere
- Education: Teach the general public on the novelties, and democratization of service creation tools to allow creation from non-specialists
- Legal coordination: Coordination of national requirements and laws in a global manner. Harmonization of the regulations (Interoperability).
- Privacy: Enforcement of laws, have the tech sector comply with democratic values, protect anonymity, manage the sharing of credentials.
- Social innovation: Translate services to help with social development (smart cities, quality of life etc).
- Manufacturing chips and hardware for Europe

Possible Roles for NGI SARGASSO

The final question was about the possible roles the experts could see for the NGI SARGASSO project, and the funding priorities we should have.

- Enable experimentation and adaptation regarding AI: The idea is not to fund AI creation but need the need to raise the TRL of existing applications/solutions.

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- Coordination on the policy side: A clear mention about the fact that there is not enough collaboration on the policy side, to ensure that the technical solutions become effective. If coordination happened globally this would be way more effective.
- Democratic interoperability: it was suggested to support sustained collaboration between the US and the EU.
- Digital Equity: It seems to be a big issue in the US. A lot of money is now available from the recent Infrastructure Investment and Jobs Act[1]. There is a massive need for capacity building. Some cities in the US are advanced but there are many small communities, and they don't know what to do with the money. Advice to encourage smaller communities to engage.

Canadian Government exchanges

With the invitation of the NGI SARGASSO Project Officers, NGI SARGASSO representatives of ESF and SPLORO were invited to discuss with representatives from the Office of the Chief Information Officer of the Treasury Board Secretariat / Government of Canada, within the unit that dealt with digital credentials.

The purpose of these discussions was to identify areas of cooperation, within the context of NGI SARGASSO, between the Canadian Government and the EC. The discussions centered around defining a topic/theme that could be supported by both NGI SARGASSO cascade funded projects and Canadian companies funded from the Canadian Government.

The main challenge was to align the different funding mechanisms that were available, as well as identifying the right way to pair the EU teams (which would be more research focused, as per NGI SARGASSO calls requirements) , with the Canadian teams, which would be more market oriented, given the financial mechanisms available to the Government of Canada unit.

There were several meetings between February 2023 and June 2023 to delineate the terms of the collaboration. A consensus was reached to:

- Focus on the "travel continuum" as a topic, and the area of digital credentials, as this was seen to be particularly relevant to transatlantic cooperation.
- Open a separate line in the first SARGASSO Open Vall, targeted specifically to EU teams that would like to operate in the area of digital credentials. The separate line had a

[1] https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/06/fact-sheet-the-bipartisan-infrastructure-deal/

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dedicated cascade fund budget of 300K, deducted from the main Open Call budget (800K)

- EU teams interested on the above call, would submit their proposal without a Canadian counterpart (unlike the main NGI SARGASSO Open Call line that requested an already identified US/CA counterpart). The pairing of the EU team with a Canadian team would happen at a second stage, decided by the EU/CA representatives.

The following main collaboration activities were identified, for the Canadian Open Call line, as suitable:

- Advance interoperability testing of technical conformity and/or compatibility between trust frameworks
- Test issuing and verification services and infrastructures between jurisdictions.
- Test the interoperability of digital wallet solutions, including testing EBSI wallet framework interoperability with Canadian digital credential technologies
- Develop and test an approach for decentralised trusted data registries.

This collaboration is expected to increase synergies between NGI and Canada across similar initiatives. Furthermore, insights garnered from this collaboration support the advancement of digital trust capabilities across jurisdictions and interoperability within the larger global digital economy.

Identification of main NGI Challenges

Following the results of the survey, the several interviews and the discussions with the Canadian representatives during the first trimester of 2023, and in consultation with the NGI Sargasso Project Officers, the consortium defined 9 concrete challenges and an open challenge for the first Call.

List of challenges for Call 1

- CH1: Sustainable Digital Infrastructure Across Continents: Addressing environmental issues in digital networks, systems and infrastructure has emerged as a priority in both Europe, Canada and the USA, as increased complexity in systems may require additional resources. Sustainable maintenance, repair, and life-cycle management of digital technologies is included in this challenge.
  Knowledge Areas: Internet Architecture and Renovation, Energy Efficiency
- CH2: Harmonized Cross-Atlantic Digital Governance: The need for a unified techno/legal framework for digital services across the Atlantic is gaining attention in both the EU, Canada and the USA. This includes the development of efficient networks,

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interconnections, and consistent regulation of data and cloud services to facilitate cross-border data exchanges and services.
Knowledge Areas: Internet Architecture and Renovation, Trust, Data Sovereignty

- CH3: Inclusive Public Digital Spaces for Global Community Engagement: Facilitating community engagement via public digital spaces is becoming a priority in Europe, the US, and Canada. These public platforms should be inclusive and accessible, complementing private platforms.
  Knowledge Areas: Digital Identity, Trust, New Internet Commons
- CH4: Enhanced Data Security and Privacy in Transcontinental Perspective: The improvement of data security measures and stronger protections for personal data are a shared concern in Europe and North America. A focus is on respecting individual's data sovereignty and privacy.
  Knowledge Areas: Trust, Data Sovereignty, Digital Identity
- CH5: Interoperability and Standardisation Across Borders: Seamless interaction between systems and devices is essential for interconnected digital environments. Europe, the US, and Canada have a joint interest in establishing widely accepted technological standards and protocols.
  Knowledge Areas: Interoperability & Standardisation
- CH6: Global Implementation of Decentralised Technologies: As the world becomes more digitally connected, the implementation of decentralised technologies has become a crucial issue in Europe, Canada and the USA. These technologies offer a more distributed and resilient framework for digital services and require shared standards and protocols to ensure interoperability.
  Knowledge Area: Decentralised Technologies, Interoperability & Standardisation
- CH7: Encouraging Transatlantic Citizen Participation: Fostering citizen engagement in the digital society and smart city development is a shared priority for Europe, Canada and the USA. Tools and developments enabling this participation becoming a reality will be the target of this challenge.
  Knowledge Areas: Trust, Digital Identity
- CH8: Quantum-Resistant Security Systems: With advancing technology, traditional encryption methods become more vulnerable, highlighting the importance of quantum encryption. Integrating quantum encryption into security systems provides an extra layer of protection against potential cyber threats, ensuring the confidentiality and integrity of sensitive information. By combining quantum encryption with efforts to bridge the digital divide, a more secure and inclusive digital environment can be created for everyone.
  Knowledge Area: New Internet Commons, Trust
- CH9: Ethical Implementation of Blockchain and Decentralised Technologies: As blockchain and other decentralised technologies continue to evolve, there's a growing need to ensure their ethical application, particularly in Europe, Canada and USA. This involves careful consideration of the social implications of these technologies, such as

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how they can influence power dynamics, citizen participation, and digital inclusivity. It also includes developing strategies for mitigating potential risks or harm, such as data misuse or the exacerbation of digital divides.
Knowledge Area: Trust, Decentralised Technologies, New Internet Commons, Digital Identity

- CH10: Open Challenge for Next Generation Internet: Open for any project that addresses an emerging issue related to the specified areas of knowledge. This challenge encourages innovative solutions in the fields of Trust, Data Sovereignty, Digital Identity, Internet Architecture and Renovation, Decentralised Technologies, Interoperability & Standardisation, and New Internet Commons across Europe, USA and Canada.
Knowledge Area: Trust, Data Sovereignty, Digital Identity, Internet Architecture and Renovation, Decentralised Technologies, Interoperability & Standardisation, New Internet Commons

List of challenges for Call 2

The Challenges were very well addressed during the first call, with the exception of two of them, which did not gather much interest from the applicants: The 7th Challenge, Encouraging Transatlantic Citizen Participation, and the 9th Challenge, Ethical Implementation of Blockchain and Decentralised Technologies. Thus it has been decided to replace them for Call 2. Given that the call already contained an open challenge it was deemed an acceptable change, in order to include other areas that were not initially part of the call.

The new challenges identified where the following:

Challenge 7: Next-Gen Cybersecurity and Generative AI: Cybersecurity stands as a cornerstone of the Next Generation Internet (NGI). However, cyber threats are continuously evolving and becoming increasingly sophisticated. The recent advancements in Generative AI capabilities offer new threats and new opportunities in the area of cybersecurity. This challenge delves into the intersection of advanced cybersecurity and Generative Artificial Intelligence to tackle this ever-shifting landscape.

Challenge 9: Redefining intelligence in a hyperconnected world: In their hyperconnected world, where billions are online and data sensors abound, they must seize the opportunity presented by AI advancements to reshape how they confront modern challenges like sustainable cities and climate change. It's time for them to demonstrate that the synergy between human users, data sensors, and AI agents is the solution to today's societal challenges, all while safeguarding human rights.

The full list of Challenges for Call 2 was thus the following:

- CH1: Sustainable Digital Infrastructure Across Continents
- CH2: Harmonized Cross-Atlantic Digital Governance
- CH3: Inclusive Public Digital Spaces for Global Community Engagement

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- CH4: Enhanced Data Security and Privacy in Transcontinental Perspective
- CH5: Interoperability and Standardisation Across Borders
- CH6: Global Implementation of Decentralised Technologies
- CH7: Next-Gen Cybersecurity and Generative AI
- CH8: Quantum-Resistant Security Systems
- CH9: Redefining intelligence in a hyperconnected world
- CH10: Open Challenge for Next Generation Internet

Evaluator Workshop

On the 18th of December 2023, a workshop has been organised with the Evaluators of the First Open Call. The aim of this workshop was to collect the feedback of the Evaluators about the way the applicants addressed the Challenges proposed for Call 1, and which Challenges they would suggest for other Calls.

4 evaluators participated to the workshop (Nicolas Reffé, Alexey Anshakov, Camelia Ecaterina Pocris and Alberto Bonetti).

For the first part of the workshop, we asked the evaluators if the applicants understood well the challenges, and if they had comments on the way the applicants fit them.

All the evaluators agreed that the Challenges were well understood and covered. They noticed a strong correlation between the quality of the state of the start description and the success rate of the projects and recommended to invite the applicants to better focus on the state of the art on their applications forms. They also recommended to ask the applicant to write a small paragraph to justify their Challenges' choice.

For the second part of the workshop, we asked the evaluators what the key issues within their area of research/expertise are to solve/investigate, for the immediate future and that were not mentioned in the list of Challenges identified for the first Call.

The Long term data management, which is a spread issue among all the challenges, was mentioned as a key issue that should clearly be addressed. In addition, it was suggested to work on the interface with the legacy system.

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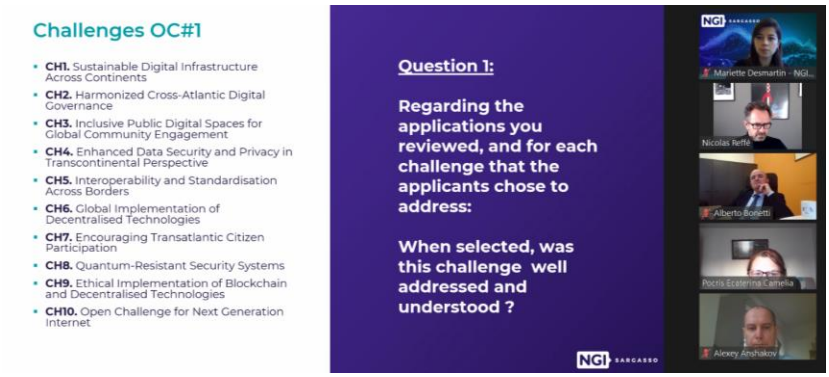

FIGURE 4. WORKSHOP WITH THE CALL 1 EVALUATORS.

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Conclusions and next steps for challenge definition

NGI SARGASSO's first year challenge definition for open calls #1 and #2 included several feedback mechanisms to define and update the challenges.

The first open call challenges were created with input from the wider community, expert interviews and discussions with the EC and Canadian Government. The 10 challenges identified give the possibility for teams to propose a variety of projects across many areas of the NGI research ecosystem.

The initial response to the open call #1 was deemed successful across most challenge areas, and thus the second call was decided to not deviate too much from the list of challenges that the call would include. Additionally, NGI Sargasso received excellent feedback from the first calls applicants and evaluators, which encouraged us to continue in that way.

Two challenges were replaced from #1 to #2, in order to insert new challenge areas (AI and Cybersecurity), to replace challenges that were not very popular in the first call. However, due to overlap in the challenge focus and the presence of a completely open challenge, this change should not eliminate the opportunity for a team to propose projects in specific domains.

Calls #3-#5 would see the incorporation of new challenges, especially since 2024 will give the opportunity for NGI Sargasso to discuss with US government entities. Their needs could possibly define new challenges to be included. For the general call challenges, NGI Sargasso will use input from the open call of evaluators (survey on the application form) as well as go back to the experts and NGI community to iterate the challenge definition once again,.

Our calls inspired great ideas and projects, which will hopefully answer tomorrow's challenges in the frame of the next-generation internet technologies in a global manner.

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Appendix

Annex 1: Survey's questions

Estimate time of completion: 10 - 15 minutes

Once validated, it will be uploaded to SurveyMonkey format

Dear colleague,

The Next Generation Internet (NGI) is a European Commission initiative that aims to shape the development and evolution of the Internet into an Internet that responds to people's fundamental needs, including trust, security, and inclusion, while reflecting the values and the norms all citizens enjoy in Europe.

We, the NGI SARGASSO project, will sponsor collaborative experiments between EU, US and/or Canada teams with a common ambition on disruptive technology with the potential to reshape tomorrow's Next Generation Internet technologies and services.

We are reaching to you to help us identify the most important research challenges to be addressed during the NGI SARGASSO calls.

The NGI SARGASSO team

Statistics

Question 1: Name

Email?

Question 2 : You are…..

Multi-choice list:

1) Researcher in an academic institution
2) Researcher in a non-academic institution
3) Employed in IT related industry
4) Employed in non-IT related industry
5) Governmental/Public/Agency employee
6) Non-Profit employee
7) Self-employed/ Consultant
8) Student
9) Retired
10) Other [text field]

Question 3: Based in : [Country selection]

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Question 4 : Indicate your areas of focus/interest in the following list (multi-choice)

- 5G/6G
- AI
- Augmented/eXtended/Virtual Reality
- Blockchain / Distributed Ledger technologies
- Big Data
- Cybersecurity
- Cloud / Edge computing
- Digital Commons
- E-ID
- IoT
- Metaverse / Future Media
- Quantum computing
- Privacy and Trust technologies
- Web 3.0
- Other [specify]

Issues

Question 5: In your opinion, what are the MOST important issues for the development and evolution of the human-centric internet in the IMMEDIATE future (1-3 years)?

- Internet Architecture renovation
- Interoperability
- Inclusion
- Openness
- Data Protection
- Data Sovereignty
- Privacy
- Resilience
- Security
- Sustainability
- Transparency
- Trust

Question 6: What would you say are the MOST important issues for the development and evolution of the human-centric internet in the LONG-TERM future (5+ years)?

- Internet Architecture renovation
- Interoperability
- Inclusion
- Openness
- Data Protection
- Data Sovereignty

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- Data Privacy
- Resilience
- Security
- Sustainability
- Transparency
- Trust

Question 7: In your opinion, what are the key issues within your area of research/expertise to solve/investigate, for the immediate future (keywords)?

[Free text]

Question 8: In your opinion, what are the key issues within your area of research/expertise to solve/investigate, for the long-term future (keywords)?

[Free text]

Question 9: If you could fund research and development efforts to solve ONE problem related to Next Generation Internet, in the next 3 years, what would you choose?

[Free text]

Question 10: Would your above answer change if you had to take it to account development efforts from the other side of the Atlantic (for example, US or Canada if you are based in Europe, or Europe if you are based in the US or Canada).

- No, answer remains the same
- Not sure
- Yes, answer is different [specify]

Closing

Question 11: Have you taken part in previous NGI initiatives? (yes/no)

Question 12: (if yes) In what capacity?

- I was part of an NGI project
- I was part of a project that was funded by an NGI project
- I advised/cooperated with an NGI project of NGI funded project in my work capacity
- Other
- Optional: Name of project?: [specify]

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Data use

Question 13: Do you agree to be contacted by NGI SARGASSO for open call opportunities?

By filling out this survey, you consent to the following conditions for use of the data:

No personal data will be shared beyond the survey analysis team and contact information will be used for internal purposes only. Aggregate, anonymised data will be deposited into the Zenodo repository and the raw data will be deleted no later than one year after the survey has been conducted.

Yes

No

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Annex 2: Answers to the Open Question of the Survey.

AI-enabled Vulnerabilities Detection and Repairing in IoT Operating Systems and Applications
Civil rights, free speech, inclusion, and democracy. Low-tech and agile approach to be promoted, and open models (open source, data, hardware, education, etc.) generalised.
Connectivity & mobility : I would heavily invest in research to close the gap once and for all, for those who don't have high speed internet at a reasonable cost. According to UNESCO, in 10 countries, women are 30-50% less likely than men to make use of the internet.
Cybersecurity related to attacks on AI
Cyberthreats
Data Quality
Data market for IoT data and how to achieve trustworthiness of offered IoT data and, consequently, IoT data market in general (including the transactions on the IoT data market).
Decentral and sovereign identities - for they are the gateway between physical and digital world.
Decentralised media architecture – from CDN & rights management, to moderation, monetisation & creative re-use/re-purposing/re-mixing, plus platform interoperability. ActivityPub/Mastodon has empowered decentralised text-driven networks; rich media (aka audio, images, video) has a long way to go.
Enhance 1) security, 2) privacy, 3) interoperability and 4) scalability
Ethical, Legal, and Policy Considerations of Artificial Intelligence and Machine-Learning
European non-commercial communication platforms (social media, videoconference, etc...)
Exploring and building systems that interact with user emotional states.
From a business and technical perspective kill the data lakes.
Giving users more control over their data and information
How to build intelligence and computing into the net
How to solve interoperability issues in Open RAN architectures.
I will fund a project to build machine learning training databases that are trustworthy, where bias is mitigated as much as possible.
I would like to have a mechanism similar to reputation that assess domains, javascript and cookies and I would like to pre-select which I accept similarly to what information I'm willing to share.
Inclusion / Accesibility
Integrating data analytic methods (visual analytics + analysis algorithms) with decision intelligence as a tool to support decision-making in diverse communities.
Interoperability and autonomous future network
Interoperability, integration and enhancement of digital solutions to improve the energy efficiency and citizens' life quality (air quality to improve health, increase of grid stability, tackle energy poverty, etc.) in cities.
IoT wireless sensor networks, IoT, Wireless sensor networks
Launch a US fundation to support (and advocate for) long term all EU open source initiaitives

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Link with the economy.
Metaverses interoperability
Orchestration and management
People-centric Meta environment over the webpage that enables people, information, and interactions to have a presence and enables collective computing a la Douglas Engelbart
Privacy related to user interaction/transactions within Internet.
Reduce the attack surface caused by IoT nodes exposed via the Internet.
Responsible AI deployment and adoption
Since there are currently many different decentralized identity technologies (protocols, data formats, etc.), and different ecosystems across the world are therefore not interoperable, one important problem to solve would be to create better "universal" tools that bridge or map between them.
Trusting the Internet for Privacy
Truthfullness and usefulness of information
With the rise of the Internet of Things, organizations operating in this space are facing new challenges. Identity and access management (IAM) for IoT becomes a fundamentally critical component of IT security for these organizations and is inextricably linked to digital efficiency. We need solutions
accessibility of public service to people with disabilities
cybersecurity and maintenance of open source
data governance
data privacy
privacy
sustainability
trustworthy network interactions - no chance of it being malware or imitations or persuasive large language models

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Annex 3: Interview questions

BACKGROUND ON THE INTERVIEWEE(S)

1. Please describe what your role is regarding NGI related research and technology.

2. Have you participated in an NGI related project in the past? If yes, can you provide some details?

FEEDBACK ON THE NGI CHALLENGES

3. What are the NGI technology areas that are of particular interest for you and/or your organisation?

4. What do you see as the main challenges for the Next Generation Internet, from your perspective and experience?

5. From the challenges you identified, what would you advise as the main topics for NGI SARGASSO to fund, to make the MOST difference in the ecosystem both
   A) in the immediate (next 1-3 years) and
   b) long term future (3+ years)?

6. NGI SARGASSO is focused on EU/US and EU/Canada cooperation. Are you aware of any key issues that would benefit from such an approach (i.e. the funding of international teams to tackle issues that are relevant from both sides of the Atlantic)?

7. Are there any research areas that perhaps don't receive as much attention as they should, in your opinion? If yes, what is their importance?

8. Why do you think the NGI SARGASSO calls are relevant in the current climate? What would you like to see coming from them?

THANK YOU FOR YOUR PARTICIPATION! IF YOU HAVE ANY QUESTIONS, DO NOT HESITATE TO CONTACT US UNDER (EDETSIS@ESF.ORG), AND DON'T FORGET TO GET INVOLVED THROUGH OUR WEBSITE (HTTPS://NGISARGASSO.EU/)

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